K.V.R G.V.R

ALL IN ONE

PHYSICAL SCIENCE

CCE Pattern

A COMPLETE BOOK OF

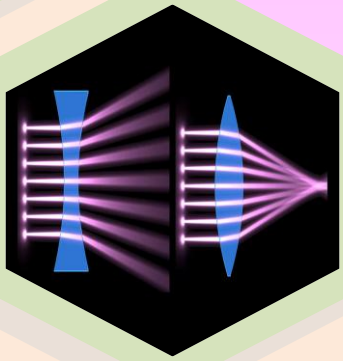
FORMATIVE ASSESSMENT - 1

For Class X (E.M)

Lab Activities

Project Works

Slip Tests



PHYSICAL SCIENCE 4 EVER
PHYSICAL SCIENCE FOR ALL
Imagine - Inspire - Invent

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ANNUAL PLAN -2022-23

PHYSICAL SCIENCE :: X CLASS

Sl.No	Month	Syllabus to be covered	Periods	Remarks
1	Jul-22	Readiness 1. Heat 2. Acids, Bases and Salts	22	
2	Aug-22	3. Refraction of light at plane surfaces 4. Refraction of light at curved surfaces.	22	
3	Sep-22	5. Human eye and colourful world	20	F.A - 1
4	Oct-22	6. Structure of Atom	19	F.A - 2
5	Nov-22	7. Classification of Elements – The Periodic Table 8. Chemical Bonding	25	S.A - 1
6	Dec-22	9. Electric Current 10. Electromagnetism	26	
7	Jan-23	11. Principles of Metallurgy 12. Carbon and its Compounds	20	F.A - 3
8	Feb-23	13. Carbon and its Compounds	22	F.A - 4
9	Mar-23	Revision	23	
10	Apr-23	Revision	21	S.A - 2

Tentative Exams Schedule for 2022 - 23

S.No.	Name of the Assessment	Dates for Assessment	Last Date for Uploading of Marks	Syllabus
1.	Formative Assessment - 1	Sept. 7, 8 & 9, 2022	Sep 15, 2022	Upto August
2.	Formative Assessment - 2	Oct 13,14 & 15, 2022	Oct 20, 2022	Upto Sept.
3.	Summative Assessment - 1	Nov 21 to 30, 2022	Dec 12, 2022	Upto Nov.15
4.	Formative Assessment - 3	Jan 19, 20 & 21, 2023	Jan 27, 2023	Upto Dec.
5.	Formative Assessment - 4	Feb 6, 7 & 8, 2023	Feb 13, 2023	Upto Jan.
6.	SSC Pre Final	Feb 22 to Mar 4, 2023	Mar 8, 2023	Full Syllabus
7.	Summative Assessment - 2	Apr 13 to 27, 2023	Apr 29, 2023	Full Syllabus

Note : Any changes in the Examination Schedule will be intimated by SCERT

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By
K V RAMANA & G V RAMA PRASAD

PREFACE

We (K V RAMANA & G V RAMA PRASAD) decided to prepare **ALL IN ONE, A Complete Book of Formative Assessments** for the help of all Physical Science 4 Ever blog users. As a part of that book we presently prepared this for "**ALL IN ONE, Formative Assessment 1**" book. We will try to give you a complete **ALL IN ONE, A Complete Book of Formative Assessments** for F.A – 2, F.A – 3 and F.A - 4.

Working towards improving the children's learning through observing and recording their performance, while they are participating in teaching learning processes like project works, lab activities, slip tests, etc., is called **Formative Assessment**.

It is used by the teacher to continuous observe children's progress in a non-formal way and in supportive environment. It gives regular descriptive feedback, rather than marks and grades, which give a chance for the students to reflect on their performance, take advice and improve upon it.

For class 10 formative assessments have to evaluate through four measures.

1) Lab Activities (10 marks)
2) Written works (10 marks)
3) Project works (10 marks)
4) Slip test (20 marks)

Teacher should conduct the above four tools for every formative assessment. Let us know in detail inside pages.

We very much thankful to all the viewers of our physicalscience4ever blog for giving this opportunity to help you in the view PHYSICAL SCIENCE, what we like. This book is only for the private use. No one should use this for commercial proposes.

Yours,
K V RAMANA & G V RAMA PRASAD,

1. Syllabus for FA 4

For 10th Class Formative Assessment Syllabus as follows.

1) **Heat**
2) **Acids, Bases and Salts**
3) **Refraction of light at plane surfaces**
4) **Refraction of light at curved surfaces**

Students should read thoroughly Heat (Unit: 1),Acids, Bases and Salts (Unit: 2), Refraction of light at plane surfaces (Unit: 3) and Refraction of light at curved surfaces (Unit 4). They must read the complete lesson and try to understand deeply, the concepts in each lesson. They observe the figures given in the text book and ask himself some questions about figures for easy answering CCE model questions.

2. Lab Activities for10 marks

In Formative Assessment Lab Activity is an important tool. Student shouldparticipate in lab activity to perform activities which are mentioned in the text book under the titleof Lab Activity. Teacher should access student inParticipate in Lab Activities (Experiments) and Lab Record. Teacher should observe students when they are working individually, in groups, how they selectand arrange apparatus, observations and recordings. Student shouldwrite their lab record. Lab record is 200 pages notebook and is helpful for the student to observe how they did the experiment. 6 marks are awarded for this lab record and 4 marks for performance.

Items in Lab Record:

Aim: It explains why we perform the experiment.

Apparatus: Here we should mention required apparatus and materials, chemicals.

Precautions: We should mentioned the precautions that must fallow while performingexperiment.

Procedures: Here we should write the process.

Reporting: We should report our observations in the form of table, flowchart etc.

Result analysis: Analyze the above data.

Generalization: We come to certain conclusion based on the experiments.

1) Write the factors that affect the process of evaporation.

Aim : To prove the factors affect the rate of evaporation.

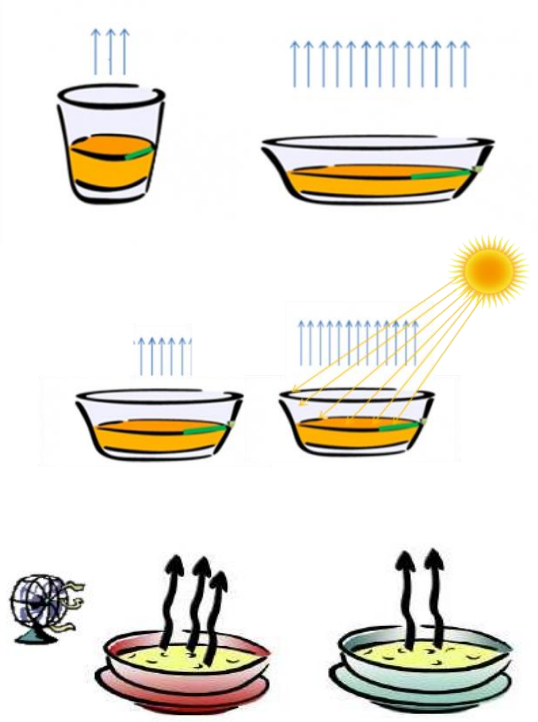
Material required:

- 5 plates that can hold 100ml water,
- 1 glass that can hold 100ml water (the area of the mouth of the glass must be at least 3 times smaller than the plate)
- 600 ml water
- 1 fan

Evaporaton : Evaporation is the process by which liquid spontaneously turns into gas. In the case of water, it turns into water vapor.

Proceedure:

1) For this experiment, the independent variables are the water- surface area, temperature and air pressure. The dependent variable is the rate of water evaporation. The constants (control variables) are the amount of water used in each experiment.
2) The glass and one of the plates are filled with 100ml of water each. The water in the plate will have a larger surface area than the water in the glass. The rate of evaporation is observed every 10 minutes. The results are recorded in the table below.
3) Two of the plates are filled with 100ml of water each. One of the plates is placed indoors where the temperature is cooler and the other plate is placed directly under the sun where the temperature is higher. The rate evaporation of the water is observed every 10 minutes. The results are recorded in the table below.
4) The last two plates are filled with 100ml of water each. One of the plates is placed directly in the path of the wind from the fan and the other plate is placed away from the fan. The wind from the fan will reduce the air pressure around the first plate. The rate of evaporation of the water is observed every 10 minutes. The results are recorded in the table below.



Observations:

The results show that the plate with the larger space area, the plate placed under the sun and the plate placed under the fan had the water evaporating faster.

specimen	Environment	result
Glass of water	Small surface area	
Plate of water	Larger surface area	✔
Plate of water indoors	Lower temperature	
Plate of water under the sun	Higher temperature	✔
Plate of water away from the fan	Higher air pressure	
Plate of water under the fan	Lower air pressure	✔

✔-indicates a faster rate of evaporation

Result:

The rate of evaporation of water will be faster with a larger surface area, higher temperature or lower air pressure environment, is proven to be true.

Precautions :

1. Observe the levels of water in the plates carefully.
2. Take same quantity and temperature of water at the beginning of the each experiment.

2) Classify the liquids as acids, bases and neutral solutions.

Aim: Identify the liquids as acids, bases and neutral solutions.

Apparatus/chemicals: Watch glasses -5, Hydrochloric acid (HCl), Acetic acid(CH_3COOH), Sodium hydroxide (NaOH), Magnesium hydroxide [$Mg(OH)_2$], Sodium bicarbonate ($NaHCO_3$), water (H_2O), blue litmus papers, red litmus papers, phenolphthalein and Methyl orange.

Procedure:

1) Clean the watch glasses very well to ensure that solutions do not become contaminated.
2) Take four watch glasses and put one drop of the first solution in each one of them and test the solution as follows.
   a) Dip the blue litmus paper in the first watch glass.
   b) Dip the red litmus in the second watch glass.
   c) Add a drop of methyl orange to the third watch glass. and
   d) Add a drop of phenolphthalein to the fourth watch glass.
3) Observe the respective colour changes and note down in the table.
4) Do the same with all the solutions and note the colour changes in the table.

Observations:

Sl. No.	Sample Solution	Colour of Blue litmus	Colour of Red litmus	Colour of phenolphthalein	Colour of methyl orange	Result
1	HCl	red	Red	clear	red	Acid
2	CH_3COOH	red	Red	clear	red	Acid
3	NaOH	blue	Blue	pink	yellow	Base
4	$Mg(OH)_2$	blue	Blue	pink	yellow	Base
5	$NaHCO_3$	blue	Blue	pink	yellow	Base
6	H_2O	blue	Red	clear	orange	Neutral

Result analysis:

1. Blue litmus paper turns red when dipped in an acid solution.
2. Red litmus paper turns blue when dipped in a basic solution.
3. In a neutral solution each paper retains its original color.
4. Phenolphthalein indicator solution turns pink color in a basic solution but remains colorless in an acidic or neutral solution.
5. Methyl orange indicator solution turns yellow color in a basic solution, turns red colour in an acidic orange colour in neutral solution.

Generalization: An indicator is a chemical compound, either on a test paper or in a solution that changes color depending on the acidity or basicity of a solution and, thus, is used to test for the presence of acids or bases.

Precautions: All of the acids and bases used in this lab are very corrosive to eyes, skin, and other body tissues. They are toxic by ingestion. Avoid all body tissue contact. Acetic acid, hydrochloric acid and ammonium hydroxide are also toxic by inhalation. Avoid breathing the vapors. Wear chemical splash goggles and wash hands thoroughly with soap and water before leaving the laboratory.

3) Identify the acid and base by olfactory indicators.

Aim: Identify the acid and base by olfactory indicators.

Apparatus/chemicals:, Hydrochloric acid (HCl), Sodium Hydroxide (NaOH), Onion, Vanilla, Clove oil, clean cloths, plastic bag, two test tubes, glass rod.

Procedure:

1) Put some finely chopped onions in a plastic bag along with some clean cloth.
2) Tie up the bag tightly and keep it overnight in fridge.
3) The cloth strips can now be used to test for acid or base.
4) Check the odour of the cloth strips. The cloth is in onion odour. Keep tow strips on a clean surface and put a few drops of dilute HCl on one strip and few drops of dilute NaOH on the other.
5) Rinse both the strips separately with distilled water and again check their odour and note the observations.
6) Take some dilute HCl in one test tube and dilute NaOH in another test tube.
7) Add a drop of dilute vanilla essence to both test tubes and stir well with glass rod. Check the odour and record the observations.
8) Test the change of odour with clove oil using dilute HCl and dilute NaOH and record the observations.

Onion

Clove oil

Vanilla essence

Observations:

Sl. NO	Indicator	HCl	NaOH
1	Onion	Does not change odour	Losses its smell
2	Vanilla	Smell doesn't vanishes	Smell vanishes
3	Clove oil	Smell does not change	Smell cannot be detected

Result Analysis:

1) Onions, Vanilla and Clove oil contain some types of acids. When the acids react with bases they neutralized. So the smell vanishes in the presence of base.

Generalization: An Olfactory indicator is defined as a substance whose smell varies when it is mixed with an acidic or basic solution. Such substances can be used in the laboratory to test whether a solution is a base or an acid, and this process is called olfactory titration.

Precautions: Avoid breathing the vapors of HCl and NaOH. Wear chemical splash goggles and wash hands thoroughly with soap and water before leaving the laboratory.

4) Explain the procedure of finding specific heat of solid experimentally

The procedure of finding specific heat of solid (zinc sample):

Aim: To find the specific heat of given solid.

Material Required: Calorimeter, stirrer, Thermometer, water, steam heater, wooden box and zinc rod.

Procedure:

1. Measure the mass (m_1) of the calorimeter along with stirrer.
2. Now fill one third of the volume of calorimeter with water and measure the mass (m_2)
3. Mass of the water inside the calorimeter = ($m_2 - m_1$)
4. Note the temperature (T_1) of the water inside the calorimeter and the calorimeter.
5. Place solid (zinc sample) in hot water or steam heater and heat up to 100°C (T_2)
6. Transfer the hot solid (zinc) quickly into the calorimeter.
7. Measure the temperature (T_3) of the mixture after settles to a certain temperature.
8. Measure the mass (m_3) of the calorimeter along with contents.
9. Then the mass of the zinc rod = ($m_3 - m_2$)
10. According to the principle of method of mixtures, the heat lost by the zinc rod (solid) is equal to the heat gained by the calorimeter and water.

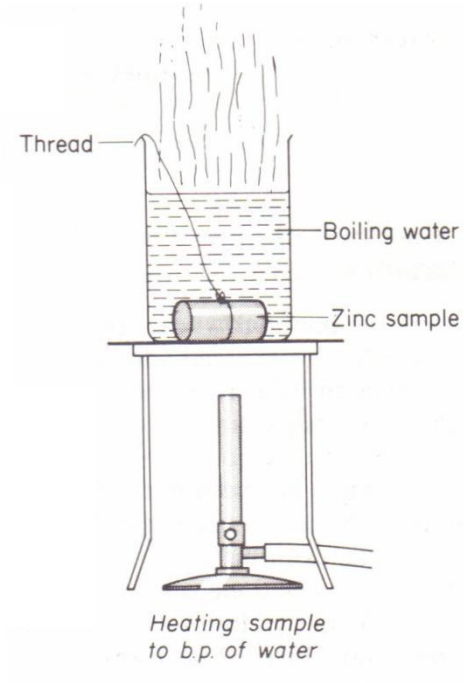
Heat lost by the zinc sample =

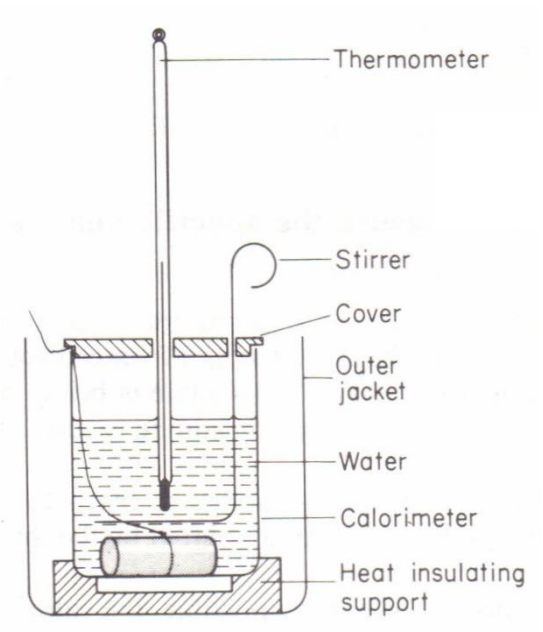
Heat gain by the calorimeter + Heat gain by the water

$$(m_3 - m_2)S_l(T_2 - T_3) = m_1S_c(T_3 - T_1) + (m_2 - m_1)S_w(T_3 - T_1)$$

$$S_l = \frac{[m_1S_c + (m_2 - m_1)S_w](T_3 - T_1)}{(m_3 - m_2)(T_2 - T_3)}$$

By using the above formula, we can calculate the specific heat of the solid





5) Compounds such as alcohols and glucose contain hydrogen but are not categorized as acids. Describe an activity to prove it

Aim: Activity to show compounds such as alcohols and glucose contain hydrogen but are not categorized as acids.

List of the material required:

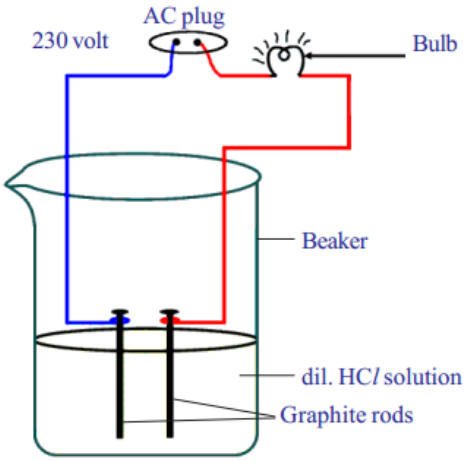
1. Glucose, 2. Alcohol, 3. Dil. HCl, 4. Dil-H_2SO_4, 5. Beaker, 6. Connecting wires, 7. 230 voltage AC supply, 8. Bulb, 9. Graphite rods, 10. Water.

Procedure:

1. Prepare glucose, alcohol, hydrochloric acid and sulphuric acid solutions.
2. Connect two different coloured electrical wires to graphite rods separately as shown in figure.
3. Connect free ends of the wire to 230 volts AC plug.
4. Complete the circuit as shown in the figure by connecting a bulb to one of the wires.
5. Now pour some dilute HCl in the beaker and switch on the current.

Observation: The bulb starts glowing.

Repeat activity with dilute sulphuric acid, glucose and alcohol solutions separately.



Observation:

1. We will notice that the bulb glows only in acid solutions.
2. But the bulb does not glow in glucose and alcohol solutions.

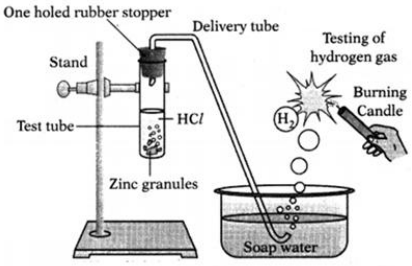
Conclusion:

1. In glucose and alcohol solution the bulb did not glow indicating the absence of H^+ ions in these solutions. So, as they contain hydrogen, they are not categorized as acids.
2. The acidity of acids is attributed to the H^+ ions produced by them in solutions.

6) Write an experiment showing the reaction of acids with metals.

Aim: To show the reaction of acids with metals.

Required Materials: Test tube, Delivery Tube, Glass trough, Candle, Soap water, Dil. HCl, Zinc granules, One holed rubber Stopper, Retard stand.



Reaction of Zinc granules with dil. HCl and testing hydrogen gas by a burning candle.

Experimental procedure:

1. Take some zinc granules in a test tube and arrange the test tube to the retort stand.
2. Fix a delivery tube to the rubber stopper and immerse the second end of the delivery tube into the soap water.
3. Add about 10 ml of dilute hydrochloric acid to Zn granules and fix rubber stopper to the test tube.
4. Evolved gas forms bubbles in soap water.
5. Bring a lightened candle near to the gas bubbles.
6. We can observe that the evolved gas put off the lightened candle and the gas burns with blue flame.

Result: We can confirm that the evolved gas is hydrogen.

Chemical reaction: Acid + Metal → Salt + Hydrogen

$2HCl_{(aq)} + Zn_{(s)} \rightarrow ZnCl_{2\,(aq)} + H_{2\,(g)}$

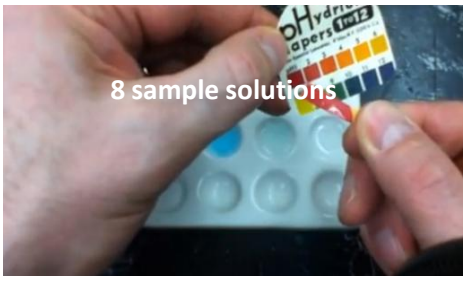
Conclusion: From the above activity, we can conclude that when acid reacts with metal, H_2 gas is evolved.

7) Testing substances by ph paper.

Aim: Testing pH of the substances by pH paper.

Material required: Sodium Hydroxide (NaOH), Hydrochloric acid (HCl), Vinegar (CH_3COOH), Baking soda, lemon juice, window cleaner, Drano (drain cleaner), detergent, empty tablet foil pack and pH papers.

Testing of HCl with pH paper



Identifying the pH value with chart

Procedure:

1) Take an empty tablet foil pack and clean it with water.
2) Take some samples of chemicals like NaOH, HCl, vinegar, baking soda, lemon juice, window cleaner; drain cleaner and detergent in the empty spaces of the tablets in the foil.
3) Take the pH papers and test the solutions with the papers.
4) Check the changing colour of the pH paper with the colour chart.
5) Note the pH values of the chemicals in the table.

Observations:

Sl. No	Solution	Colour of the ph paper after testing	pH value	Acid/base
1	Sodium Hydroxide	**Navy blue**	12	Base
2	Hydrochloric Acid	**Red**	1	Acid
3	Vinegar	**Orange**	3	Acid
4	Baking soda	**Green**	8	Base
5	Lemon juice	**Orange**	3.5	Acid
6	Window cleaner	**Light green**	7.5	Basic
7	Drain cleaner	**Drano**	12	Basic
8	Detergent	**Blue**	9.5	Basic

Result: We can find the pH values of the solutions with the help of ph colour chart.

Precautions: The empty tablet foil pack must be clean and dry. Take care of the chemicals do not mix to each other.

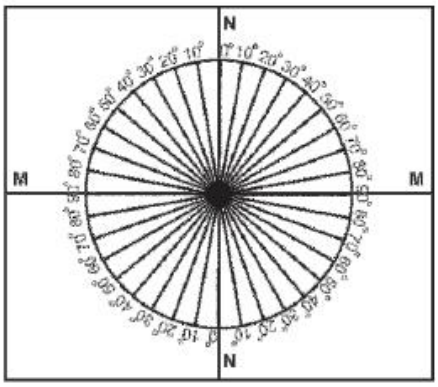
PH paper chart

8) Relation between angle of incidence and angle of refraction.

Aim: Obtaining a relation between angle of incidence and angle of refraction.

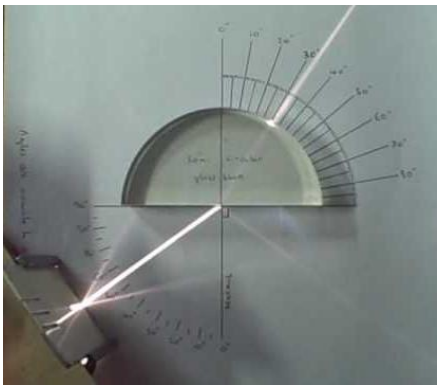
Materials required: A plank, white chart, protractor, scale, small black painted plank, a semi circular glass disc of thickness nearly 2 cm, pencil and laser light.

Procedure:



Take wooden plank which is covered with white chart. Draw two perpendicular lines, passing through the middle of the paper as shown in the figure. Let the point of intersection be O. Mark one line as NN which is normal to the other line marked as MM. Here MM represents the line drawn along the interface of two media and NN represents the normal drawn to this line at 'O'.

Take a protractor and place it along NN in such way that its center coincides with "O" as shown in the figure. Repeat the same on the other side of the line NN. The angles should be indicated on the curved line.



Now place a semi-circular glass disc so that its diameter coincides with the interface line (MM) and its center coincides with the point "O". Point a laser light along NN in such a way that the light propagates from air to glass through the interface at point O and observe the path of laser light coming from other side of disc as shown in figure.

Send Laser light along a line which makes 15^0 (angle of incidence) with NN and see that passes though point O. Measure its corresponding angle of refraction, by observing laser light coming from the other side of the glass slab. Note these values in table. Do the same for the angles of incidence such as 20^0, 30^0, 40^0, 50^0 and 60^0 and note the corresponding angle of refraction.

Observations:

Sl. No	Angle of incidence	Angle of refraction	Sin i	Sin r	Sin i/sin r
1	15^0	11.2	0.2588	0.1942	1.33
2	20^0	14.9	0.3420	0.2571	1.33
3	30^0	22.1	0.5000	0.3762	1.329
4	40^0	28.9	0.6427	0.4832	1.33
5	50^0	35.2	0.7660	0.5764	1.328
6	60^0	40.6	0.8660	0.6507	1.33

Conclusion:

From the above table we will get the ratio sin i/sin r is a constant. This is Snell's law.

9) Write an activity to show that all metal carbonates and hydrogen carbonates react with acids to give a corresponding salt.

A. **Aim:** To show that all metal carbonates and hydrogen carbonates react with acids to give a corresponding salt.

Required Materials: Two test tubes, Sodium Carbonate (Na_2CO_3), Sodium Hydrogen Carbonate ($NaHCO_3$), Two holed rubber Stopper, Thistle funnel, Stand, Dilute hydrochloric acid, Delivery tube, Calcium Carbonate (in a test tube)

Procedure:

1. Take a test tube A with 0.5 gm of sodiu carbonate.
2. Close the test tube A with two holed rubber cork.
3. Insert a thistle funnel through one hole and inse a delivery tube through the other hole.
4. Pour 2 ml of dilute HC/ to the test tube A.
5. Do the same as above with test tube B with sodiu hydrogen carbonate.

Passing CO_2 gas through $Ca(OH)_2$ solution

Observation: Carbon dioxide is released from test tube A and B.

Passing CO_2 gas through $Ca(OH)_2$ solution

Chemical Reaction:

$Na_2CO_{3(s)} + 2\ HCl_{(aq)} \rightarrow 2\ NaCl_{(aq)} + CO_{2(g)} + H_2O_{(l)}$

Metal Carbonate + Acid → Salt + Carbon dioxide + Water

$NaHCO_{3(s)} + HCl_{(aq)} \rightarrow NaCl_{(aq)} + CO_{2(g)} + H_2O_{(l)}$

Metal Hydrogen Carbonate + Acid → Salt + Carbon dioxide + Water

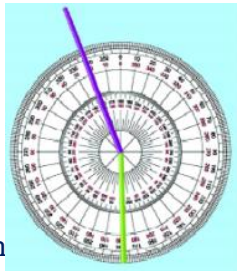
Result: All metal carbonates and hydrogen carbonates react with acids to give a corresponding salt.

10) How do you verify experimentally that the angle of refraction is more than the angle of incidence when light rays travel from denser to rarer medium?

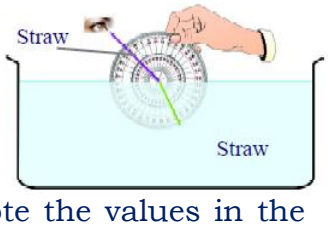
Aim: To verify experimentally that the angle of refraction is more than the angle of incidence when light rays travel from denser to rarer medium

Materials required: A metal disc, two straws and a transparent vessel.

Procedure:



1. Take a metal disc. Use a protractor and mark angles along its edge as shown in the figure.
2. Arrange two straws at the centre of the disc, in such a way that they can be rotated freely about the centre of the disc.
3. Adjust one of the straws to make an angle of 10°.
4. Immerse half of the disc vertically into the water and filled in a tran While dipping, verify that the straw at 10° must be inside the water.
5. From the top of the vessel, try to view the straw which is inside the water as shown in the figure.



6. Then adjust the other straw which is outside of the water until both straws look like they are in a single straight line.
7. Then take the disc out of the water and observe the two straws on it. You will find that they are not in a single straight line.
8. Measure the angle between the normal and second straw. Note the values in the following table.
9. Do the same for various angles and find the corresponding angles of refraction and note them in the table.

Observation: We will find the angle of refraction is more than the angle of incidence. i. e., r > i.

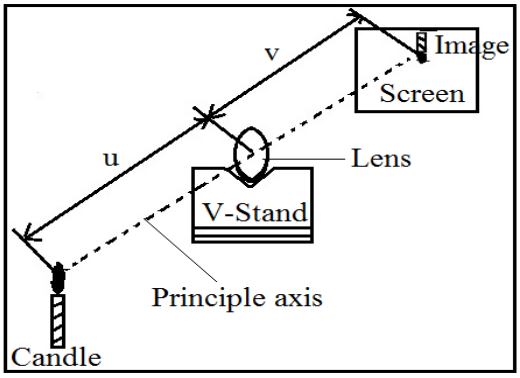
Conclusion: When light travels from denser (water) to rarer (air) it bends away from the normal.

11) How do you find the focal length of a lens experimentally?

Aim: To determine the focal length of a convex lens.

Apparatus: Convex lens, meter scale, V-stand, screen, candle (object).

Procedure:



1. Take a v – stand and place it on a long table in the middle and place a convex lens on the v – stand.
2. Light the candle and place it at a distance of 60cm from the lens on the principal axis.
3. Adjust the screen which is on the other side of the lens to get an image on it.
4. Measure the distance between the candle and the stand of the lens, this value is noted as object distance(u).
5. Measure the distance of the image from the stand of the lens, this value is noted as image distance (v).
6. Repeat the experiment for various object distances (u) like 50cm,40cm, 30cm and measure the distance of the image (u) in all cases as noted in the following table.

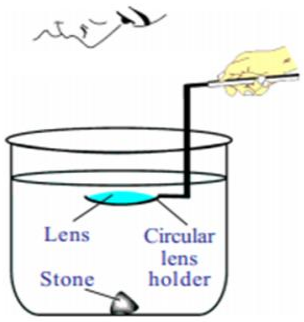
S.No.	Object distance (u)	Image distance(v)	Focal length $f=\frac{uv}{u-v}$
1	60 cm		
2	50 cm		
3	40 cm		
4	30 cm		

7. From the above table $f=\frac{uv}{u+v}$ value is constant.
8. This average constant value gives the focal length of the given lens.

12) How do you verify experimentally that the focal length of a convex lens is increased when it is kept in water?

Aim: To prove the focal length of a convex lens is increased when it is kept in water.

Apparatus: Convex lens, water, cylindrical vessel, circular lens holder, stone.



Procedure:

1. Take a cylindrical vessel like a glass tumbler. Its height must be greater than the focal length of a lens, (around four times the focal length of the lens).
2. Keep a black stone inside the vessel at its bottom and pour the water into the vessel such that the height of the water level from the top of the stone is greater than the focal length of a lens.
3. Now dip the lens horizontally using a circular lens holder.
4. Set the distance between the stone and lens that is equal to or less than the focal length of the lens and sees the stone through the lens. We can see the image of the stone.
5. If we dip the lens to a certain height which is greater than the focal length of the lens in air, still we can see the image.
6. This shows that the focal length of the convex lens has increased in water.
7. Thus we conclude that the focal length of the lens depends upon the surrounding medium.

3. Project works 10 marks

In Formative Assessment project work is another tool which contains 10 marks. Thereare different types of projects in every lesson under the academic standards information skills and projects. So teachers select any type of project from improve your learning or from content. Basedon the resources teachers has a choice to select any other topics which is related to content.Projects are different types.Based on members, project nature and procedure.(By interview, by collecting information, by observing nature)

Steps in Project Report:

1.Name of the project: Write the name of the project which you select to do.

2. Objectives: Write what you learnt after completion of the project.

3. Tool: Required materials are written in this field.

4. Procedures: Write step by step procedure.

5. Table:Drawa table if the project has.

6. Conclusion: Write what you know from this project.

7. Resources: From where you get the relevant material.

8. Thanks giving: Give thanks for supporters.

Project Report Assessment:

Preparation, conducting project - 3 marks

Project report - 5 marks

Discussion on project - 2 marks

By
K V RAMANA & G V RAMA PRASAD
8008423323 & 7799884688

PROJECT-1 : FACTORS EFFECT ON EVAPORATION

Name of the project: Factors effect on evaporation.

Aim of the project: To know the factors effect on evaporation.

Hypotheses : The process of escaping molecules from the surface of a liquid at any temperature is called evaporation.

Material required: Internet, samples of cloths, cups, saucer, petrol, water,

Procedure:

1) we collect information from various books and internet about the factors effect on evaporation.
2) we observe various incidents in our daily life situations about evaporation process.
3) we collect the data about the factors which depend on evaporation in our daily life.

Collection of information 1 2 3

The factors depend on evaporation:

1) **Speed of air:** evaporation depends on speed of air. If the speed of air increases evaporation also increases. Ex: wet cloths dry in the air of fan.

4 5

2) **Increase of temperature :** if the temperature in atmosphere increases, rate of evaporation also increases. Ex: wet cloths dry quickly in summer because temperature increase of temperature in atmosphere. 6

3) **Surface area:** If the surface area increases, the rate evaporation also increases. Ex: The rate of evaporation different in different vessels which have different surface. The water in saucer evaporates quickly than cup.

7 8

4) **Humidity:** If the humidity increases in air, the rate of evaporation decreases. Ex: Wet cloths do not dry quickly in rainy season. 9

5) **Nature of the liquid:** Evaporation of liquids depends on the nature of the liquid. If the density of liquid increases, the rate of evaporation decreases. Ex: rate of petrol more than water.

Observations:

- ❖ We observe the rate of evaporation of a floor increased in the presence of air of a fan.
- ❖ We observe the rate of evaporation of water in wet cloths increased in summer season than rainy season.
- ❖ The tea which in saucer cools quickly than the cup.
- ❖ we observe the rate of evaporation of water In wet cloths decrease in more humidity in air.
- ❖ we observed the rate of evaporation of various liquids are different.

Precautions:

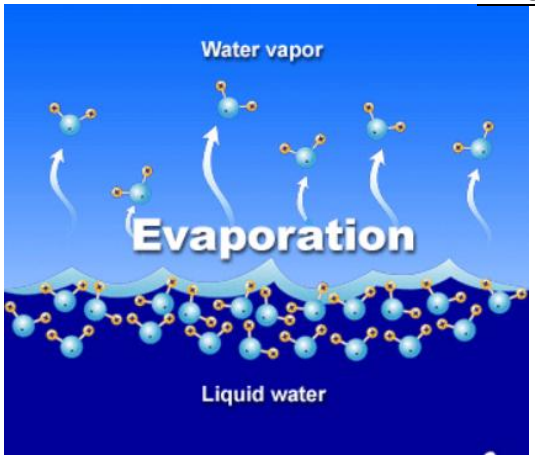
- ➢ we should store petrole in air tight containers to prevent evaporation.
- ➢ We should cool the hot liquids in vessels which have more surface area.

Conclusion:

Our teachers and parents guided us to do the project. We discussed about the various applications of evaporation in our daily life and prepare the project report. we know the importance of evaporation while doing the project.

PROJECT-1 : PICTURES

1



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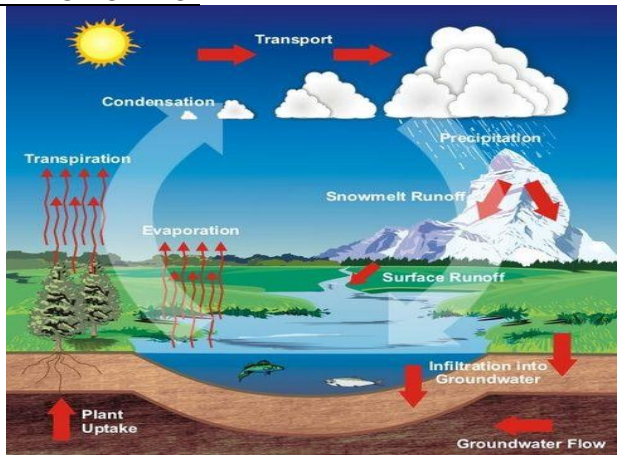

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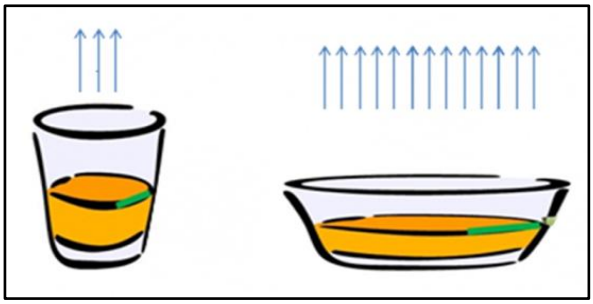

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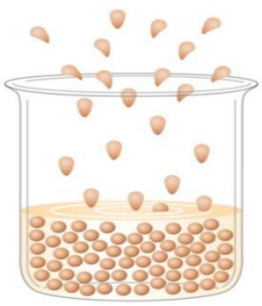

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PROJECT-2 : APPLICATIONS OF TOTAL INTERNAL REFLECTION

Title of the Project: Collect the information about the applications of total internal reflection.

Purpose of the project: To know the applications of total internal reflection in our daily life.

Hypothesis: When the angle of the incidence is greater than critical angle, the light ray gets reflected into the denser medium at the interface. This phenomenon is called total internal reflection. This is very useful in our daily life situations. A

Materials: 10th class Physical science text book, Science magazines, internet articles.

Procedure: We collect data of applications of total internal reflection in internet.

1) **BRILLIANCE OF DIAMONDS:** The critical angle of diamond is very low (24.8^0). So if a light ray enters a diamond it is very likely to undergo total internal reflection which makes the diamond shine.

1 2

2) **OPTICAL FIBRES:** Total internal reflection is the basic principle behind working of optical fibre. An optical fibre is very thin fibre made of glass or plastic having a radius about a micrometer. A bunch of such thin fibres form a light pipe. Light going in to the fibre makes a nearly glancing incidence of the wall. The angle of incidence is greater than the critical angle and hence total internal reflection taken place. The light is thus transmitted along the fibre.

3 4

3) **Optical fibres are used in endoscopy to see the internal organs of our body.**
All organs of the human body are not accessible to the naked eye of the doctor. The doctor inserts an optical fibre pipe into the stomach through the mouth. Light is sent down through one set of fibres in the pipe. This illuminates the inside of the stomach. The light from the inside travels back through another set of fibres in the pipe and the views gets the image at the outer end (generally fed to the computer screen).

5 6 7 8

4) Optical fibres are used in transmitting communication signals through light pipes.

5) Optical fibres are used in international telephone cables laid under the sea, in large computer network etc.,

9

6) Optical fibres are used in photometric sensors to measuring blood flow in the heart.

10

Project outcome:

- The total internal reflection makes the diamond shine.
- Light pipes are used in laparoscopy and endoscopy if medical field.
- Optical fibres are also used in science and technology.

Reference: 10^{th} class physical science text book, internet articles, etc.,

Acknowledgements: Our teachers, parents and friends.

PROJECT-2 PICTURES

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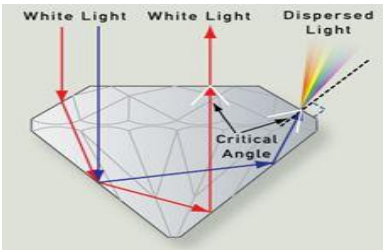

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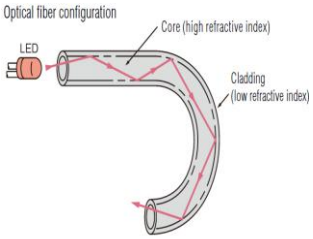

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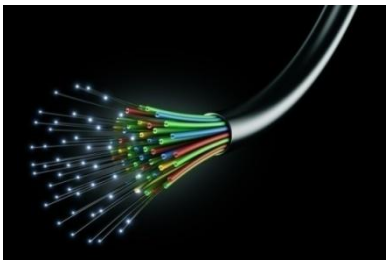

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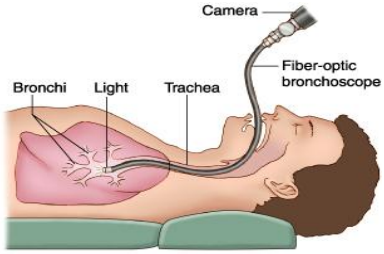

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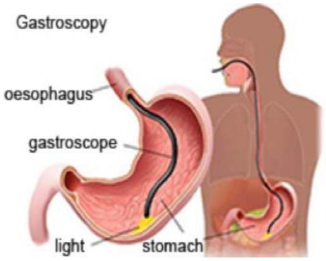

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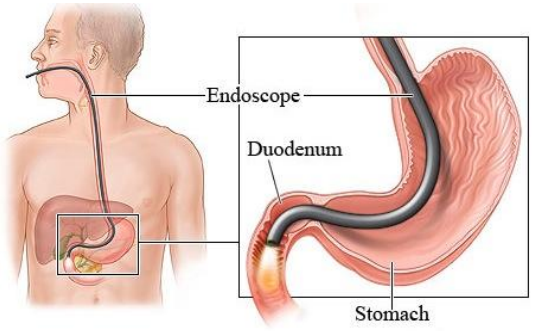

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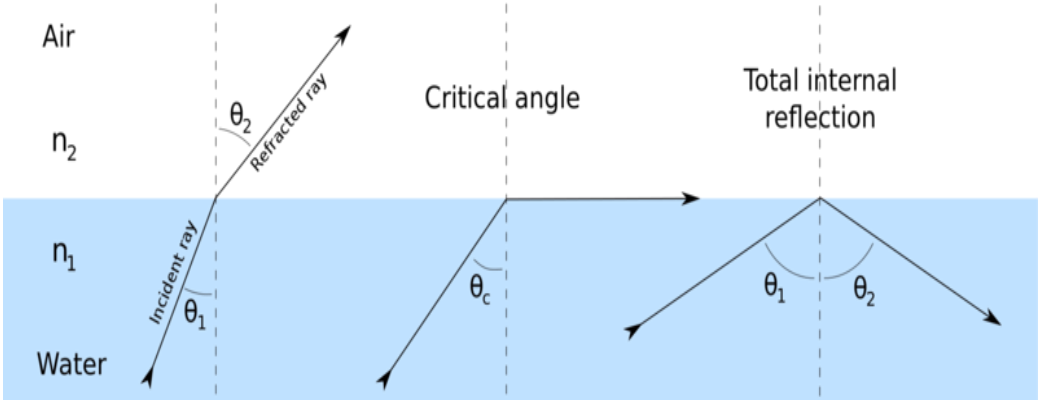


A

PROJECT-3 : PREPARE A REPORT ON ACID BASE INDICATORS

Title of the Project: Recognize the acids and bases using natural and synthetic indicators.

Purpose of the project: To test the acidity and basicity of the substances using natural and synthetic indicators.

Hypothesis: Indicators are substances whose solutions change colour due to changes in pH. These are called acid-base indicators.

Tools: observation and experimentation.

Materials: hydrochloric acid, sodium hydroxide, soap solution, baking powder, lemon juice, tomato juice and vinegar.

Procedure:

We collect information about acid-base indicators from our text book. We collected the natural indicators which we use in our daily life. We tested the acidic and basic properties of the solutions using some natural and synthetic indicators.

Introduction: We used many substances in our daily life. With the help of some substances we will test the nature of acids and bases. The natural and synthetic indicators are very useful to detect the nature of the acid and base.

Process: We collect information about the properties of acids and bases from internet and text book. We detect acidic and basic property of some substances in our laboratory with the help of indicators.

1) **Indicators:**

Indicators are substances whose solutions change colour due to changes in pH. These are called acid-base indicators.

- **Natural indicators:**

  There are many natural materials like litmus, extract of red cabbage, turmeric solution and extracts of coloured petals of some flowers contain dye molecules which are weak acids or bases. These can be used as acid base indicators to detect the nature of the solution for acidity or basicity

- **Synthetic indicators:**

  There are some synthetic indicators such as methyl orange and phenolphthalein that can be used to test for acids and bases.

2) **Detect the nature of the substances with the indicators :**

We collected some substances like hydrochloric acid, sodium hydroxide, soap solution, baking powder, lemon juice, tomato juice and vinegar. With the help of indicators like China rose solution indicator, turmeric solution, blue litmus, red litmus and methyl orange, we detect the acidity and basicity of the solutions.

solution	China rose indicator	Turmeric indicator	Litmus solution blue/red	Methyl orange
Hydrochloric acid	red	Does not change	Blue to red	red
Sodium Hydroxide	green	Red	Red to blue	yellow
Soap solution	green	Red	Red to blue	yellow
Baking powder	green	Red	Red to blue	yellow
Lemon juice	red	Not change	Blue to red	red
Tomato juice	red	Not change	Blue to red	red
Vinegar	red	Not change	Blue to red	red
sucrose	Not change	Not change	Not change	Not change

Observations:

- China rose solution changes the acids as red and bases as green.
- Turmeric solution changes the acids as red. it does not change the alkali solutions.
- Acids change the blue litmus as red and bases changes red litmus as blue.
- Methyl orange changes the acids red. It changes the base as yellow.

Interpretation of the student:

We detected the various solutions as acids and bases. Chin rose solution converts acids to red colour. We surprised the changes of colours in acids and basis when adding indicators.

Precautions:

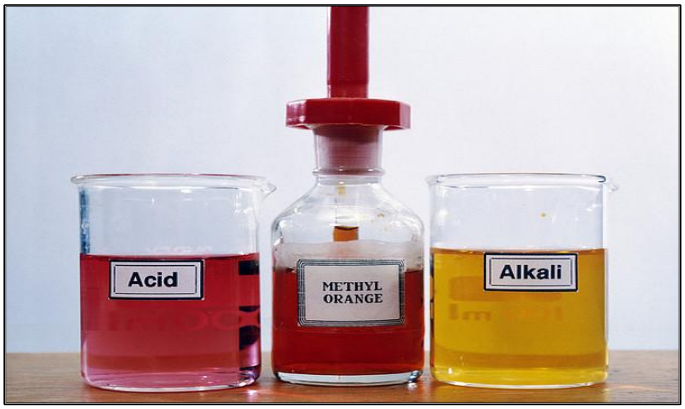
- We will take care with concentration acids.
- We don't taste some solutions in our laboratory to detect acids and bases.

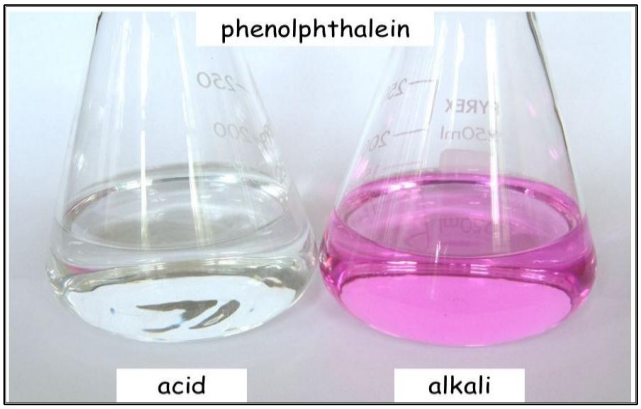
Conclusion:

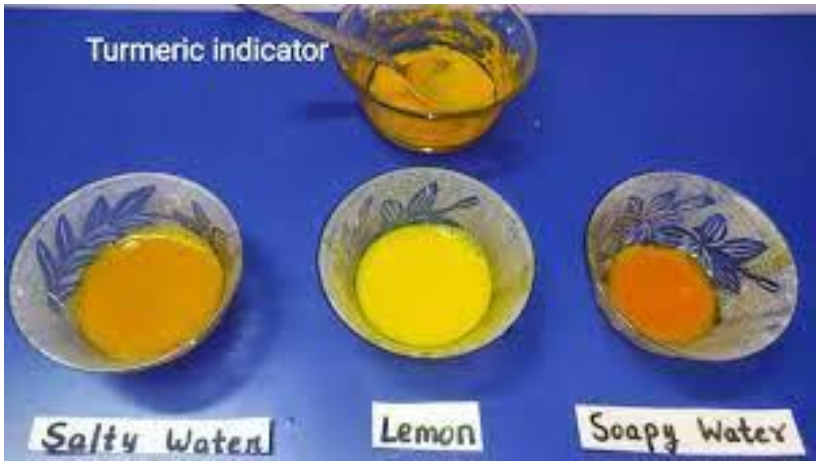
In this project we understand the acid base indicators in our daily life. We observed the nature of acid and base by taste. We detected the acidity and basicity of some substances in our laboratory with some indicators. In these experiments our teachers guided us. We understand the natural and synthetic indicators in our daily life.

References: Internet, Britannica encyclopedia, physical science text books, laboratory

PROJECT PICTURES







PROJECT 4: MAKE AN INDICATOR USING HIBISCUS PETALS.

Title of the Project: Make an indicator using hibiscus petals.

Purpose of the project: To make an indicator with natural resources to test acid and bases.

Hypothesis: Indicators are substances whose solutions change colour due to changes in pH. These are called acid-base indicators. Some petals of the flowers contain dye molecules which are weak acids and bases. These can be used as acid-base indicators.

Materials: hibiscus flowers, container, surgical spirit, mortar, pestle, hydrochloric acid, sodium hydroxide.

Procedure:

1) Cut approximately 10 mature hibiscus flowers.
2) Remove the stigma, and detach the leaves, so as to have only the red petals remaining.
3) Put them in a container, and pour approximately 6ml of ethanol or surgical spirit; the latter works best.
4) Crush the petals using an appropriate implement, such as a mortar and pestle. Crush until all of the liquid has been extracted from the petals. Filter the solution, and you have the reddish indicator ready. 1 2 3 4
5) Take hydrochloric acid in a beaker and add the hibiscus indicator. it turns in to highlighted red colour. 5
6) Take Sodium hydroxide in a beaker and add the hibiscus indicator. It turns in to dark green (almost black) colour. 6

Learning outcome: we prepare the natural indicator with hibiscus flowers to know the acidity and basicity of the solutions.

Precautions: Take care with hydrochloric acid while doing the testing of acidic property.

Interpretation of the student: After completion of the project we know the acidic and basic properties of the solutions with the help of indicators.

Conclusion: After completion of this project we conclude that indicators are substances whose solutions change colour due to changes in pH. These are called acid-base indicators. Some petals of the flowers contain dye molecules which are weak acids and bases. These can be used as acid-base indicators.

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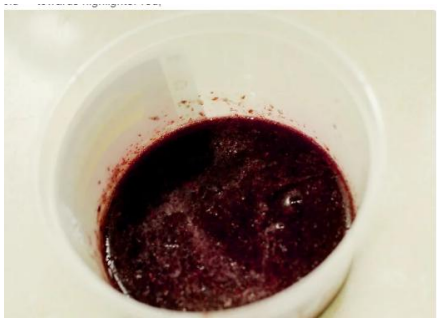

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PROJECT 5 : USES OF ACIDS AND BASES IN OUR DAILY LIFE

Title of the Project: Collect information of common acids and bases used in our daily life.

Purpose of the project: To understand the acids and bases which we used in our daily life.

Hypothesis: We use many substances in our kitchen. We use many solutions in various situations in our daily life. In those some are neutral solutions. Some solutions are either acidic or basic.

Materials: Vinegar, soft drink, lemon juice, baking soda, tamarind juice, detergents etc.,

Procedure: We collect the data of uses of acids and bases in internet.

Introduction:

Acids and bases are very useful in our daily lives. Without acids, we won't have Vitamin C (ascorbic acid); your car won't start (sulphuric acid in car batteries) or even accelerated rotting of your food (food preservative in the form of citric acid). Similarly, imagine a world without bases. Without bases, stubborn stains on your clothing won't come off (sodium hypochlorite in bleach), you'll have dirty mirrors (ammonium hydroxide used in glass cleaners) and even having bowel problems as laxatives can be made from magnesium hydroxide.

Uses of Acids:

Acid	Use of the acid
Benzoic acid	Its salt are used to preserve food
Carbonic acid	To make carbonated drinks
Ethanoic acid	A main compound of vinegar
Hydrochloric acid	household cleaning / swimming pool maintenance
Nitric acid	Production of fertilisers, explosives,
Sulphuric acid	To make detergent, polymer and fertilisers.
Tartaric acid	Manufacturing of soft drinks, provide tartness to food.

Uses of bases

Base	Use of base
Ammonia	Production of fertilisers.
Aluminium hydroxide	To make gastric medicine (antacid)
Calcium hydroxide	To make cement, limewater, neutralise the acidity of soil.
Sodium hydroxide	Manufacturing of soaps, detergents, and cleaners.
Magnesium hydroxide	Suspension of magnesium hydroxide in water is used as an antacid, used as an antiperspirant armpit deodorant and as a non-hazardous alkali to neutralise acidic waste water.

Some Common Acids and Bases

The tables below list a few well-known acids and bases, along with their formulas and a few applications

Common Acids

- Acetic acid (CH_3COOH) : vinegar, acetate
- Acetylsalicylic acid ($HOOCC_6H_4OOCCH_3$) : aspirin
- Ascorbic acid ($H_2C_6H_6O_6$): vitamin C
- Carbonic acid (H_2CO_3): soft drinks, Seltzer water
- Citric acid ($C_6H_8O_7$): citrus fruits, artificial flavorings
- Hydrochloric acid (HCl): stomach acid
- Nitric acid (HNO_3): fertilizer, explosives
- Sulfuric acid (H_2SO_4): car batteries

Common Bases

- Aluminum hydroxide ($Al[OH]_3$): antacids, deodorants
- Ammonium hydroxide (NH_4OH): glass cleaner
- Calcium hydroxide ($Ca[OH]_2$): caustic lime, mortar, plaster
- Magnesium hydroxide ($Mg[OH]_2$): laxatives, antacids
- Sodium bicarbonate/sodium hydrogen carbonate ($NaHCO_3$): baking soda
- Sodium carbonate (Na_2CO_3): dish detergent
- Sodium hydroxide (NaOH): lye, oven and drain cleaner
- Sodium hypochlorite (NaClO): bleach
- **Learning outcome:** We use many solutions in our daily life. The solutions have acidic, basic and neutral property.
- **Precautions:** Take care with substances which have acidic or basic property while using. Don't use tiles cleaning acid directly with our hands while using in our bath rooms.
- **Interpretation of the student:** After completion of the collection of data about acic and basic substances we know that which is acidic or basic. By this information we take care while using the substances.
- **Conclusion:** After completion of this project we conclude that many substances which we use in our daily life have either acidic or basic property. In our kitchen we use many acids and bases in cooking

vinegar

soft drinks

Citrus fruits

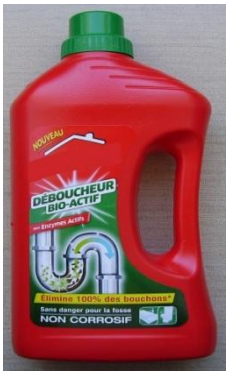
car batteries

Glass cleaner

Antacids

Backing soda

Deodorant



drain cleaner

bleach

PROJECT 6: IMPORTANCE OF pH IN EVERYDAY LIFE

Title of the Project: Importance of pH in everyday life.

Purpose of the project: To know the role of pH in our daily life.

Hypothesis: pH plays a important role in our daily life

Materials: 10th class Physical science text book, internet

Proceedure: pH is a measure of the hydrogen ion concentration of a solution. Solutions with a high concentration of hydrogen ions have a low pH and solutions with low concentrations of H+ ions have a high pH. The equation that defines pH is given as follows:

$$pH = -\log [H^+]$$

The pH of neutral solutions is 7. Values less than 7 in the pH scale represent an acidic solution. pH value of a solution above '7' represents the basic solution.

Importance of pH in everyday life:

1) In our digestive system:

Our stomach produces hydrochloric acid. This dilute hydrochloric acid helps in digesting our food without harming the stomach. Sometimes excess of acid is produced in the stomach. The excess acid in the stomach causes indigestion which produces pain and irritation. In order to cure indigestion, we can take bases called antacids. Being basic in nature, antacid react with excess acid in the stomach and neutralises it. The two common antacids are Milk of Magnesia (Magnesium Hydroxide) and Sodium Bicarbonate (Baking soda)

2) pH change as the cause of tooth decay

When we eat food containing sugar, then the bacteria present in our mouth break down the sugar to form acids. This acid lowers the pH in the mouth. Tooth decay starts when the pH of acid formed in the mouth falls below 5.5.This is because then the acid becomes strong enough to attack the enamel of our teeth and corrode it. This sets in tooth decay. The best way to prevent tooth decay is to clean the mouth thoroughly after eating food.

3) *Plants and animals are sensitive to pH change*

Soil pH and plant growth: Most of the plants grow best when the pH of the soil is close to 7. If the soil is too acidic or basic, the plants grow badly or do not grow at all. The soil pH is also affected by the use of chemical fertilisers in the field. Chemicals can be added to soil to adjust its pH and make it suitable for growing plants. If the soil is too acidic then it is treated with materials like quicklime or slaked lime.

4) Some animals and plants contain acids:

Honey bee injects an acid through its stings which causes pain and irritation. Hence, a mild base like baking soda is applied to treat the wound. Similarly, nettle leaves, which have stinging hairs, when touched inject formic acid in our body. This causes a burning pain. As remedy, the affected area is rubbed with the dock plant. The dock plant is alkaline which neutralizes the effect of acid.

5) The brilliance of a tarnished copper vessel can be restored by using acid:

Lemon juice contains an acid. In order to clean a copper vessel, we rub it with the piece of lemon. The tarnish on the vessel is caused by the formation of a layer of basic copper oxide. Since lemon juice contains citric acid, it reacts with the copper oxide to form copper citrate and is washed away. The vessel then regains its shining appearance.

Learning outcome: We know the properties of acids. We know the applications of acids in our daily life. we know the how to neutralise the acidic property in different methods.

Precautions:

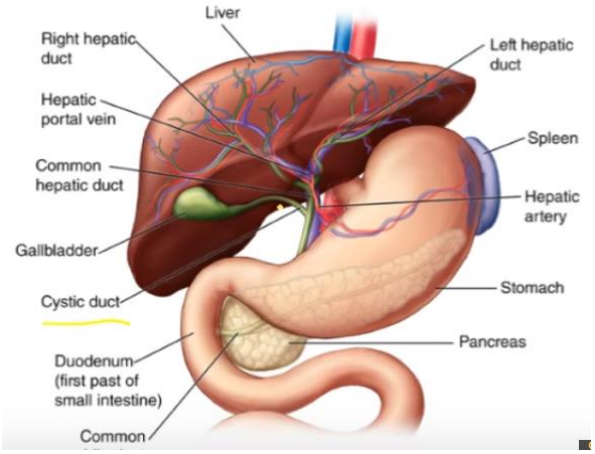
1) Clean the mouth thoroughly after eating the food.

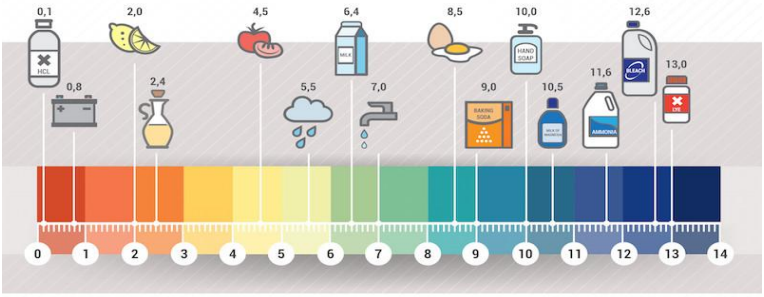
2) If Honey bee injects acid in our body, we use any basic solution to neutralise.

Interpretation of the student: After completion of the collection of data about the applications of pH we understand the role of pH in our daily life. We know how to neutralise the acidic property in different methods.

Conclusion: After completion of this project we conclude that Most of the plants grow best when the pH of the soil is close to 7.If the soil is too acidic or basic; the plants grow badly or do not grow at all. We know the different methods to neutralise the acidic property in our daily life situations.

PROJECT PICTURES





PROJECT 7: USES OF PLASTER OF PARIS

Title of the Project: Uses of plaster of paris

Purpose of the project: To know the uses of plaster of paris in our daily life.

Hypothesis: Plaster Paris is known as calcium sulphate hemi hydrate. When it mixing with water, it sets into hard solid mass due to the formation of gypsum.

Materials: 10th class Physical science text book, Science magazines, internet articles.

Proceedure:

Preparation:

1) Plaster of paris is also called as calcium sulphate hemi hydrate.
2) It is manufactured from Gypsum ($CaSO_4.\ 2H_2O$)
3) Large deposits of gypsum ($CaSO_4.\ 2H_2O$) at 373 K losses water molecules partially and produce a king of plaster paris ($CaSO_4.\ ½H_2O$)

Uses of plaster of paris:

1) **Architecture:** Plaster may also be used to create complex detailing for use in room interiors. In modern days this material is also used for False Ceiling. In this, the powder form is converted in a sheet form and the sheet is then attached to the basic ceiling with the help of fasteners. It is done in various designs containing various combinations of lights and colors. The common use of this plaster can be seen in the construction of houses.

2) **ART:** Plaster sets quickly and hence it becomes an ideal choice for sculptors. Many great European Frescoes and Murals are a work of Plaster of Paris. Michelangelo's Sistine Chapel ceiling is a work of Plaster of Paris.

3) **Medicine:** Plaster is widely used as a support for broken bones; a bandage impregnated with plaster is moistened and then wrapped around the damaged limb, setting into a close-fitting yet easily removed tube, known as an orthopedic cast. Plaster is also used in preparation for radiotherapy when fabricating individualized immobilization shells for patients.

4) **Fire protection:** Plasters have been in use in passive fire protection, as fireproofing products, for many decades. POP releases heat when it sets, this in turn releases vapor. This property makes it good for insulation. It can retard fire for an hour or two. It prevents heat flow and protects steel and other structural elements from collapsing in a fire.
5) **3D painting: "**Powder bed and inkjet head 3D printing**"** is commonly based on the reaction of gypsum plaster with water, where the water is selectively applied by the inkjet head.

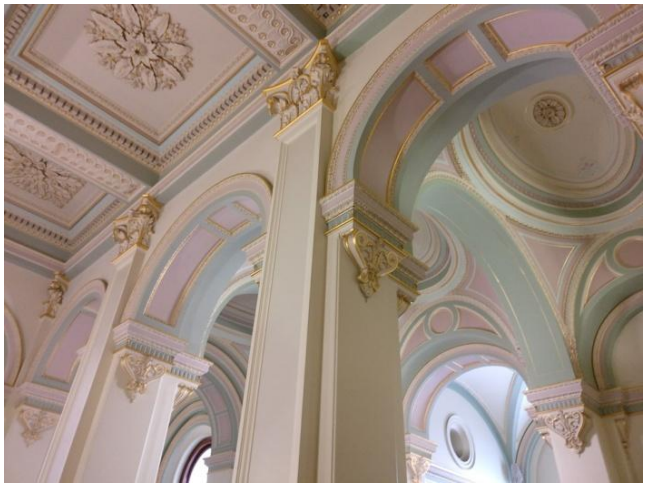
Learning outcome: We know the uses of plaster of paris in various fields.

Precautions:

1) Don't touch the plaster of paris while mixed with water. It is exothermic reaction.

Conclusion: Plaster of paris used in making toys and decoration. It is also used in the field of medicine for orthopedics. It is used to create ceilings of buildings.

PROJECT PICTURES



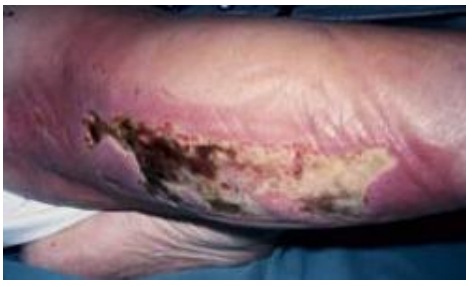
PROJECT 8: HAZARDS OF PLASTER OF PARIS

Title of the Project: Hazards of plaster of paris
Purpose of the project: To know the Hazards of plaster of paris in our daily life.
Hypothesis: Plaster Paris is known as calcium sulphate hemi hydrate. When it mixing with water, it sets into hard solid mass due to the formation of gypsum.
Materials: 10th class Physical science text book, Science magazines, internet articles.
Proceedure:
1) Plaster of paris is also called as calcium sulphate hemi hydrate.
2) It is manufactured from Gypsum ($CaSO_4$. $2H_2O$)
3) Large deposits of gypsum ($CaSO_4$. $2H_2O$) at 373 K losses water molecules partially and produce a king of plaster paris ($CaSO_4$. $\frac{1}{2}H_2O$)
4) Plaster of Paris is used in the fields of Architecture, art, Medicine and 3D painting.

Hazards of plaster of paris:
Irritation: A few suppliers classify plaster of Paris as irritating to eyes, respiratory system and skin but most do not. Even so, prolonged or repeated direct skin contact may cause irritation and attempts at removal may cause abrasion.
Burns: When plaster of Paris is mixed with water, the material slowly becomes hot. The temperature may approach 60 °C after an hour, with the highest temperatures being reached with the largest volumes. Temperatures above 45 °C can cause skin damage, the extent of damage depending on the contact time.
The combination of the hot water and the heat from the plaster's crystallization resulted in this soft tissue injury, which required several plastic surgery procedures for coverage
Trapping: When plaster of Paris is mixed with water, the material hardens and expands slightly. This can trap, for example, hands which then suffer burns as the temperature slowly rises. Physical damage may also result from attempts to remove the hardening plaster using chisels, hammers, saws, etc. Trapping is possible only if the hand or other part of the body is surrounded by the plaster/water mix as it starts to harden.
User injury: When mixing plaster, using moulds or clearing away plaster of Paris, particles or fragments can injure the eyes.
POP is harmful to the environment:
1) Studies on the impact of idol immersions carried out in places like Bhopal, Jabalpur and Bengaluru show several significant impacts like steep rise in concentration of heavy metals, dissolved solids, and acid content, and a drop in dissolved oxygen.
2) It could be assumed that the PoP idols after immersion in the natural water bodies remain as it is causing problem of sedimentation and slow pollution in the water bodies for long duration of time in comparison of Clay idols.

The immersion of PoP made idols should not be allowed in the natural water bodies since it remains insoluble in water for long time causing problem of sedimentation and slow impact on water body for long duration of time.
Learning outcome: We know the hazards of plaster of paris in our daily life. We know the pollution effects due to plaster of paris idols nimajjanam in water.
Precautions:
1) Don't touch the plaster of paris while mixed with water. It is exothermic reaction. It caused to damage our fingers.
Conclusion: Plaster of paris is useful to us. But it is harmful to the environment. So We doesn't use plaster of paris idols in Ganesh chaturthi. We use only clay idols in ganesha chaturthi festival.

PROJECT – 7 : PICTURES



PROJECT 9: COLLECT THE VALUES OF REFRACTIVE INDICES OF SOME MATERIAL

Title of the Project: Collect the values of refractive indices of some material.

Purpose of the project: To know the various refractive indices of some material.

Hypothesis: The refractive index "n" means that the speed of light in that medium is nth part of speed of light in vacuum. Refractive index depends on the nature of material and wave length of light used.

Materials: 10th class Physical science text book, Science magazines, internet articles.

Proceedure: We collect data of refractive indices of various material from 10th Class text book and internet.

Refractive indices of some material media

Material medium	Refractive index
Air	1.0003
Ice	1.31
Water	1.33
Kerosene	1.44
Fused quartz	1.46
Turpentine oil	1.47
Crown glass	1.52
Benzene	1.50
Canada balsam	1.53
Rock salt	1.54
Carbon Diasulphide	1.63
Dense flint glass	1.65
Ruby	1.71
Sapphire	1.77
Diamond	2.42

Analysis: We know that an optically denser medium may not posses greater mass density. for example, kerosene with high recractive index is optically denser than water although its mass density is less than water.

Project outcome: We collected refractive index values of some material from 10th class P.S text book and prepared a report.

PROJECT REPORT

Title of the project: Collect the values of refractive indices of some material.

Objectives of the project: To know the various refractive indices of some material.

Tools: Data collection in internet and 10th class physical science text book..

Material/Sources required: Internet, text books

Class: X

Subject: Physical Science

School:

Time frame: 5 days.

Details of the procedure followed: We collect the information about the refractive indices values from 10th class physical science text book.

Findings & Observations: we know that optically denser medium may not posses greater mass density. Ex: optical density of kerosene is greater than water.

Experiences faced: This concept is so exciting to do this project. We are enjoying to done this project work.

Project Outcome: We know the refractive indices of various material.

Conclusion: We know the values of various refractive indices of some material. We also know that the optical density of the material different from mass density.

Acknowledgement:
1. Our science teachers.
2. Internet articles.

Names of the group members and work allotment:

Sl.no.	Name of the group member	Work allotment
1		
2		
3		
4		
5		

Date of submission : signatures

4. Written Works - Note books for 10 marks

For every student writing skill is very important to express what he has understood in his own words. For these notebooks helps a lot, because of this creativity, writing by thinking on their own they develop their scientific knowledge. They have to work on writing with their own vocabulary, by using their experiences of what they learnt. After classroom discussions ask them to write explanation for those words according to their understanding. It helps to content understanding and after that to write the answers on their own. Ask them to write answers on their own for the questions under let's improve learning for every unit.

How to evaluate the written work?

There are 10 marks for written work in constructive evaluation. Written work should not be the copy from the book but it should be on his/her own. Draw the diagrams wherever necessary. Words, sentences should be meaningful without mistakes.

1. Slip test for 20 marks

As a part of constructive evaluation teacher should estimate the student's understanding after teaching every lesson. Testing the student's understanding at anytime but not in a specified time and making the students that they are writing an exam is said to be a slip test. It is not like a unit test.

How to conduct the slip test?

Conduct the test without prior declaration after teaching the lesson.20 marks for slip test. As part of constructive evaluation at FA times slip should be conducted in any period of45 minutes duration. Questions in the slip test should some of the academic standards and they should write answers on their own. Keep 200 page long notebook for slip tests. Four formative slip tests in an academic year should be written in this text book only.Basing on the answers, discuss with the children how they are in each academic standard. This is the key issue in constructive evaluation and compulsory one too. Enroll the slip tests grades in the register.

FORMATIVE ASSESSMENT -1

Time:45 Minutes. **PHYSICAL SCIENCE** MAX MARKS: 20

ENGLISH MEDIUM

Name:.....Class: 10th Roll No:.....School:.....

I. Answer the following questions: **2 X 4 = 8**

1) Five solutions A, B, C, D and E when tested with universal indicator showed pH as 4, 1, 11,7 and 9 respectively, which solution is

a) neutral **b) strongly alkaline** **c) strongly acidic**
d) weakly acidic **e) weakly alkaline**

2) You have given some lead shots and asked to find out the specific heat of lead shots. Then,
a) Which apparatus you use?
b) How can you find out the specific heat of the leadshots?

II. Answer the following questions: **3 X 2 = 6**

3) What would be the final temperature of a mixture of 50g of water at 20°C temperature and 50g of water at 40°C temperature?
4) What are the materials required acid solution in water conducts electricity?
5) Draw ray diagrams for the Object is placed at $2F_2$ of the biconvex lens and explain the nature and position of the image.

III. Answer the following question **3 X 1 = 3**

6) Ramesh observe that the water droplets formed on the walls of the glass tumbler when he poured cold water in it. Why this happens?
7) Lens formula: $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$
In the above formula, what are f, u and v indicates?
8) Why pure acetic acid does not conduct electricity?

IV. Write correct answer in the brackets: **6 X ½ = 3**

9) Match the following: ( )

SET A		**SET B**
1) Latent heat of vaporization	( )	A) 80 cal/gm
2) Latent heat of fusion	( )	B) 373 K
3) Boiling point of water	( )	C) 540 cak/gm
4) Melting point of Ice	( )	D) 273 K

(a) 1-a, 2-c, 3-b, 4-d (b) 1-a, 2-c, 3-d, 4-b
(c) 1-c, 2-a, 3-b, 4-d (d)1-c, 2-a, 3-d, 4-b

10) Observing the following table: ( )

Substance	Gastric	Milk	Blood	Washing soda
pH value	1.2	6.6	7.3	12.8

Among the above, which is the weak base?
A) Washing Soda B) Gastric C) Milk D) Blood

11) The refractive index of the medium depends on ( )
(1) Nature of the substance (2) the wavelength of light
(3) Frequency (3) All of the above
A) 1,2 only B) 2,3 only C) only on 4 D) 1,3 only

12) Air bubble in water behaves like _____ ( )
A) Converging lens B) Glass slab
C) Diverging lens D) concave mirror

13) The temperature of a steel rod is 330 K. Its temperature in ° C is ( )
A) 55° C B) 57° C C) 59° C D) 53° C

14) Suma: Added water to acid ( )
Gayatri: Added acid to water
A) Suma and Gayatri both are correct
B) Suma is correct, Gayatri is wrong
C) Suma is wrong, Gayatri is correct
D) Suma and Gayatri both are wrong